Claims

1-115. (Canceled)

116. (**Currently Amended**) In an audio encoder, a computer-implemented method comprising:

receiving multi-channel audio data;

selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein each of the plural available types of multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels;

selectively turning the selected transform on/off at plural frequency bands; and

performing the selected transform on the audio data at one or more of the plural frequency bands at which the selected transform is on, wherein the encoder performs no transform or an identity transform on the audio data at zero or more of the plural frequency bands at which the selected transform is off.

117. (Original) The method of claim 116 wherein the multi-channel audio data is in two channels.

118. (Original) The method of claim 116 wherein the multi-channel audio data is in more than two channels.

119. (Original) The method of claim 116 further comprising outputting a mask including one bit for each of the plural frequency bands.

120. (Original) The method of claim 116 further comprising outputting a single bit and, if the selected transform is not turned on at all of the plural frequency bands, a mask including one bit for each of the plural frequency bands.

121. (Original) The method of claim 116 wherein the encoder selectively turns the selected transform on/off based at least in part upon channel correlation measurements at the plural frequency

bands.

122. (Canceled)

123. (**Currently Amended**) In an audio decoder, a computer-implemented method comprising:

receiving encoded multi-channel audio data;

selecting an inverse multi-channel transform from among plural available types of inverse multi-channel transforms, wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels;

retrieving information for frequency band on/off selections for plural frequency bands; and

performing the selected transform on the audio data at one or more of the plural frequency bands at which the selected transform is on, wherein the decoder performs no transform or an identity transform on the audio data at zero or more of the plural frequency bands at which the selected transform is off.

124. (Original) The method of claim 123 wherein the multi-channel audio data is in two channels.

125. (Original) The method of claim 123 wherein the multi-channel audio data is in more than two channels.

126. (Original) The method of claim 123 wherein the retrieved information comprises a mask including one bit for each of the plural frequency bands.

127. (Original) The method of claim 123 wherein the retrieved information comprises a single bit and, if the selected transform is not turned on at all of the plural frequency bands, a mask including one bit for each of the plural frequency bands.

128. (Canceled)

129. (**Currently Amended**) In an audio encoder, a computer-implemented method comprising:

receiving multi-channel audio data;

selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein the plural available types include three or more pre-defined transforms, and wherein each of the plural available types of multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

performing the selected transform on the audio data.

130. (Original) The method of claim 129 wherein the multi-channel audio data is in two channels.

131. (Original) The method of claim 129 wherein the multi-channel audio data is in more than two channels.

132. (Previously Presented) The method of claim 129 wherein the pre-defined transforms include a DCT variant and a Hadamard transform.

133. (Original) The method of claim 129 wherein the plural available types further include a general unitary transform.

134. (Original) The method of claim 129 further comprising outputting information indicating the selected transform.

135. (Canceled)

136. (**Currently Amended**) In an audio encoder, a computer-implemented method comprising:

receiving multi-channel audio data;

selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein the plural available types include plural pre-defined transforms and at least one custom transform, and wherein each of the plural available types of multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

performing the selected transform on the audio data.

137. (Original) The method of claim 136 wherein the multi-channel audio data is in two channels.

138. (Original) The method of claim 136 wherein the multi-channel audio data is in more than two channels.

139. (Original) The method of claim 136 further comprising outputting information indicating the selected transform.

140. (Original) The method of claim 139 wherein the output information includes information for individual elements of the selected transform.

141. (Original) The method of claim 136 wherein the encoder selects one of the plural pre-defined transforms if performance of the selected pre-defined transform is suitably close to performance of the custom transform in terms of redundancy removal.

142. (Canceled)

143. (**Currently Amended**) In an audio decoder, a computer-implemented method comprising:

receiving encoded multi-channel audio data;

selecting an inverse multi-channel transform from among plural available types of inverse

multi-channel transforms, wherein the plural available types include three or more pre-defined transforms, and wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

performing the selected transform on the audio data.

144. (Original) The method of claim 143 wherein the multi-channel audio data is in two channels.

145. (Original) The method of claim 143 wherein the multi-channel audio data is in more than two channels.

146. (Previously Presented) The method of claim 143 wherein the pre-defined transforms include a DCT variant and a Hadamard transform.

147. (Original) The method of claim 143 further comprising, before the selecting, retrieving information indicating the selected transform.

148. (Original) The method of claim 147 wherein the plural available types further include a custom transform, wherein the retrieved information includes one or more signals to select the custom transform, and wherein the retrieved information further includes information for individual elements of the custom transform.

149. (Canceled)

150. (**Currently Amended**) In an audio decoder, a computer-implemented method comprising:

receiving encoded multi-channel audio data;

selecting an inverse multi-channel transform from among plural available types of inverse multi-channel transforms, wherein the plural available types include plural pre-defined transforms and

at least one custom transform, and wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

performing the selected transform on the audio data.

151. (Original) The method of claim 150 wherein the multi-channel audio data is in two channels.

152. (Original) The method of claim 150 wherein the multi-channel audio data is in more than two channels.

153. (Original) The method of claim 150 further comprising, before the selecting, retrieving information indicating the selected transform.

154. (Original) The method of claim 153 wherein the retrieved information includes one or more signals to select the custom transform, and wherein the retrieved information further includes information for individual elements of the custom transform.

155.-167. (Canceled)

168. (**Currently Amended**) A computer-readable medium storing computer-executable instructions for causing a computer programmed thereby to perform a method in an audio encoder, the method comprising:

receiving multi-channel audio data;

selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein each of the plural available types of multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels;

selectively turning the selected transform on/off at plural frequency bands; and

performing the selected transform on the audio data at one or more of the plural frequency bands at which the selected transform is on, wherein the encoder performs no transform or an identity

transform on the audio data at zero or more of the plural frequency bands at which the selected transform is off.

169. (**Currently Amended**) A computer-readable medium storing computer-executable instructions for causing a computer programmed thereby to perform a method in an audio decoder, the method comprising:

receiving encoded multi-channel audio data;

selecting an inverse multi-channel transform from among plural available types of inverse multi-channel transforms, wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels;

retrieving information for frequency band on/off selections for plural frequency bands; and

performing the selected transform on the audio data at one or more of the plural frequency bands at which the selected transform is on, wherein the decoder performs no transform or an identity transform on the audio data at zero or more of the plural frequency bands at which the selected transform is off.

170. (**Currently Amended**) A computer-readable medium storing computer-executable instructions for causing a computer programmed thereby to perform a method in an audio encoder, the method comprising:

receiving multi-channel audio data;

selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein the plural available types include three or more pre-defined transforms, and wherein each of the plural available types of multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

performing the selected transform on the audio data.

171. (**Currently Amended**) A computer-readable medium storing computer-executable instructions for causing a computer programmed thereby to perform a method in an audio encoder, the method comprising:

receiving multi-channel audio data;

selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein the plural available types include plural pre-defined transforms and at least one custom transform, and wherein each of the plural available types of multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

performing the selected transform on the audio data.

172. (**Currently Amended**) A computer-readable medium storing computer-executable instructions for causing a computer programmed thereby to perform a method in an audio decoder, the method comprising:

receiving encoded multi-channel audio data;

selecting an inverse multi-channel transform from among plural available types of inverse multi-channel transforms, wherein the plural available types include three or more pre-defined transforms, and wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

performing the selected transform on the audio data.

173. (**Currently Amended**) A computer-readable medium storing computer-executable instructions for causing a computer programmed thereby to perform a method in an audio decoder, the method comprising:

receiving encoded multi-channel audio data;

selecting an inverse multi-channel transform from among plural available types of inverse multi-channel transforms, wherein the plural available types include plural pre-defined transforms and at least one custom transform, and wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

performing the selected transform on the audio data.

174. (**Currently Amended**) An audio encoder, comprising:

means for receiving multi-channel audio data;

means for selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein each of the plural available types of multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels;

means for selectively turning the selected transform on/off at plural frequency bands; and

means for performing the selected transform on the audio data at one or more of the plural frequency bands at which the selected transform is on, wherein the encoder performs no transform or an identity transform on the audio data at zero or more of the plural frequency bands at which the selected transform is off.

175. (**Currently Amended**) An audio decoder, comprising:

means for receiving encoded multi-channel audio data;

means for selecting an inverse multi-channel transform from among plural available types of inverse multi-channel transforms, wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels;

means for retrieving information for frequency band on/off selections for plural frequency bands; and

means for performing the selected transform on the audio data at one or more of the plural frequency bands at which the selected transform is on, wherein the decoder performs no transform or an identity transform on the audio data at zero or more of the plural frequency bands at which the selected transform is off.

176. (**Currently Amended**) An audio encoder, comprising:

means for receiving multi-channel audio data;

means for selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein the plural available types include three or more pre-defined transforms, and wherein each of the plural available types of multi-channel transforms specifies a different

transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

means for performing the selected transform on the audio data.

177. (**Currently Amended**) An audio encoder, comprising:

means for receiving multi-channel audio data;

means for selecting a multi-channel transform from among plural available types of multi-channel transforms, wherein the plural available types include plural pre-defined transforms and at least one custom transform, and wherein each of the plural available types of multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

means for performing the selected transform on the audio data.

178. (**Currently Amended**) An audio decoder, comprising:

means for receiving encoded multi-channel audio data;

means for selecting an inverse multi-channel transform from among plural available types of inverse multi-channel transforms, wherein the plural available types include three or more pre-defined transforms, and wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

means for performing the selected transform on the audio data.

179. (**Currently Amended**) An audio decoder, comprising:

means for receiving encoded multi-channel audio data;

means for selecting an inverse multi-channel transform from among plural available types of inverse multi-channel transforms, wherein the plural available types include plural pre-defined transforms and at least one custom transform, and wherein each of the plural available types of inverse multi-channel transforms specifies a different transformation across plural channels for co-located values ~~at a given index~~ in the plural channels; and

means for performing the selected transform on the audio data.

180. (**Currently Amended**) The method of claim 116 wherein the co-located values ~~at the given index~~ in the plural channels are frequency coefficients at a frequency index in the plural channels.

181. (**Currently Amended**) The method of claim 123 wherein the co-located values ~~at the given index~~ in the plural channels are frequency coefficients at a frequency index in the plural channels.

182. (**Currently Amended**) The method of claim 129 wherein the co-located values ~~at the given index~~ in the plural channels are frequency coefficients at a frequency index in the plural channels.

183. (**Currently Amended**) The method of claim 136 wherein the co-located values ~~at the given index~~ in the plural channels are frequency coefficients at a frequency index in the plural channels.